

REMARKS

Remaining Claims

Twenty (20) claims (claims 1-20) remain pending in this application through this Amendment. Claims 8 and 14 have been amended. Applicants respectfully request reconsideration.

Rejection of Claims 1-13 under 35 USC §102(e) – Reeh

Claims 1-13 stand rejected under 35 U.S.C. §102(e) as being anticipated by *Reeh* (U.S. Patent No. 6,576,930). Applicants respectfully traverse this rejection.

For a rejection to be proper under 35 U.S.C. §102(e), each and every element of the claim must be disclosed in a single reference. The rejection is improper because this requirement is not met.

With regard to independent claim 1 and the claims that depend therefrom, *Reeh* discloses a system that emits polychromatic light by combining the light of a first wavelength emitted directly from the LED with light emitted from the LED and converted to a second wavelength by the conversion element (overlay). (See, e.g., Abstract.) In contrast, in accordance with one feature of Applicants' invention, monochromatic light can be emitted by selecting a combination of LED and fluorescent material overlay that ensures substantially all of the light emitted by the LED is converted to another wavelength. This can be assured, for example, by having the fluorescent material overlay layer be of a thickness sufficient to prevent light emitted by the LED from passing through unconverted. (See specification, p. 3, line 29 – p. 4, line 22.) Applicants had previously amended claim 1 to emphasize this feature of the invention.

Reeh does not disclose anything about the thickness of the conversion layer and in fact discloses that polychromatic light is emitted by combining the light emitted directly from the LED with light emitted from the LED and converted to a second wavelength by the conversion element (overlay). In other words, some light escapes unconverted. The light is not substantially fully converted, and *Reeh* does not anticipate claims 1-7.

In response to the Examiner's remarks that *Reeh* at col. 3, lines 42-50 shows that the fluorescent material overlay has a thickness capable of substantially fully converting all light emitted from the LED to fluorescent radiation, Applicants respectfully submit that the lines in *Reeh* relied on by Examiner do not show a fluorescent material overlay having a thickness capable of substantially fully converting all light emitted from the LED to fluorescent radiation. Rather, those lines in *Reeh* describe a luminescence conversion layer having a constant thickness so that light radiating from the conversion layer has a uniform color in all directions. However, there is simply no disclosure, teaching, or suggestion in *Reeh* of a fluorescent material overlay having a thickness capable of substantially fully converting all light emitted from the LED to fluorescent radiation. In fact, *Reeh* discloses quite the opposite. *Reeh* discloses that "the luminescence conversion element converts radiation of the first wavelength range into radiation of a plurality of second wavelength ranges from mutually different spectral subregions, such that the semiconductor component emits polychromatic radiation comprising radiation of the first wavelength range and radiation of the plurality of second wavelength ranges." (Col. 2, line 65 through col. 3, line 5). Thus, as Applicants have already discussed, some light escapes unconverted, and hence, the light is not substantially fully converted. Simply stated, *Reeh's* disclosure of ensuring that all light is of a uniform color does not anticipate the limitation of fully converting all light emitted from the LED to fluorescent radiation.

It appears to the Applicants that the Examiner is ignoring the functional limitations of Claim 1. Applicants respectfully submit that it is not entirely improper to claim elements of an apparatus using functional language and that the Examiner must afford weight to those claim limitations. In fact, MPEP § 2173.05(g) supports this: "A functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used." In many instances it is not improper to claim structural limitations in functional terms, and the case law cited in the MPEP acknowledges this. In the present instance, the thickness of the overlay conversion layer is claimed in terms of its ability to convert substantially all of the light emitted from the LED.

For at least this reason, Applicants believe claim 1 and claims 2-7, which depend from claim 1, are not anticipated by *Reeh*. Reconsideration and withdrawal of this rejection is respectfully requested.

With regard to independent claim 8 and the claims that depend therefrom, *Reeh* does not teach or suggest that only a portion of the fluorescent material overlay contains light-converting fluorescent material. The Examiner states, "[T]he fluorescent material overlay [has] an area including a layer of fluorescent material (4, 6) disposed over only a portion of the area, wherein another portion of the area (29) does not have any fluorescent material." The Applicants respectfully point out that the portion (4) shown in Figure 3 of *Reeh* covers the entire area of the overlay. In contrast, Applicants' claims, which recite "a fluorescent material overlay at a top end of the cavity, wherein only a portion of the fluorescent material overlay includes fluorescent material and wherein another portion of the fluorescent material overlay does not have any fluorescent material," do not read on Figure 3 of *Reeh*. Claim 8 recites that some portion of the fluorescent material overlay layer does not have fluorescent material and some other portion does. Figure 3 of *Reeh* clearly indicates (with speckling or shading) that the fluorescent material is distributed throughout the area or luminescence conversion layer labeled "4". The area labeled "4" is coextensive with the glass covering 29. While *Reeh* may disclose that the region labeled "4" has fluorescent material but the glass cover 29 does not, these are not portions or regions of the same overlay or element. Nevertheless, to advance prosecution, Applicants have amended Claim 8 to recite that only a portion of the fluorescent material overlay includes fluorescent material. Applicants respectfully submit that *Reeh* does not disclose, teach or suggest its luminescence conversion layer having only a portion of which includes fluorescent material.

For at least this reason, Applicants believe claim 8 and claims 9-13, which depend from claim 8, are not anticipated by *Reeh*. Reconsideration and withdrawal of this rejection is respectfully requested.

Rejection of Claims 14-20 under 35 USC §103(a) - Isoda

Claims 14-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Isoda* (U.S. Patent No. 6,774,406) in view of *Reeh* (U.S. Patent No. 6,576,930). Applicants respectfully traverse this rejection.

For a rejection to be proper under 35 U.S.C. §103(a), there must be some suggestion or motivation to combine the references, and the combination must teach every element in the claim. The rejection is improper because neither of the requirements is met.

There is no suggestion or motivation to combine the references. The suggested combination of references here is nothing more than hindsight reconstruction based on Applicants' teaching, which, of course, is legally impermissible. The Examiner asserts that one skilled in the art would find it obvious to implement the fluorescent material overlay of *Reeh* into the light emitting diode of *Isoda* to yield the claimed invention because in the Examiner's opinion, it is known in the art to provide light-emitting diode display devices with a fluorescent material overlay to ensure a uniform color of radiated light. But, there is no support in either of the references for combining these two references. For at least this reason, Applicants respectfully submit that the rejection is improper and request that it be withdrawn.


Moreover, even if this improper combination were made, the improper combination would not yield what is claimed. Independent claim 14 and the claims that depend therefrom, are not obvious in view of the combination of *Isoda* and *Reeh* for at least the reason that neither reference, individually or in combination, discloses, teaches, or suggests "a single fluorescent material overlay at a top end of the plurality of cavities." As conceded by the Examiner, *Isoda* does not disclose, teach, or suggest a fluorescent material overlay at a top end of the plurality of cavities. *Reeh* too does not disclose, teach, or suggest using a "single fluorescent material overlay at a top end of the plurality of cavities," as recited in claim 14. In other words, the overlay is on top of all of the cavities. Figure 3 of *Reeh* shows only a single cavity ("9") and a single LED ("1"), and nothing in the Background section of *Reeh* can properly be read to suggest otherwise. For at least this reason, Applicants believe claim 14 and claims 15-20, which

depend from claim 14, are not obvious in view of the combination of *Isoda* and *Reeh*.
Reconsideration and withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the foregoing, Applicants respectfully request further examination and allowance of the application. Should there be any further questions or concerns, the Examiner is urged to telephone the undersigned.

Respectfully submitted,
GARDNER GROFF SANTOS
& GREENWALD, PC


Daniel J. Santos
Reg. No. 40,158

GARDNER GROFF SANTOS & GREENWALD, PC
2018 Powers Ferry Road
100 Parkwood Point, Suite 800
Atlanta, Georgia 30339
Phone: 770.984.2300
Fax: 770.984.0098